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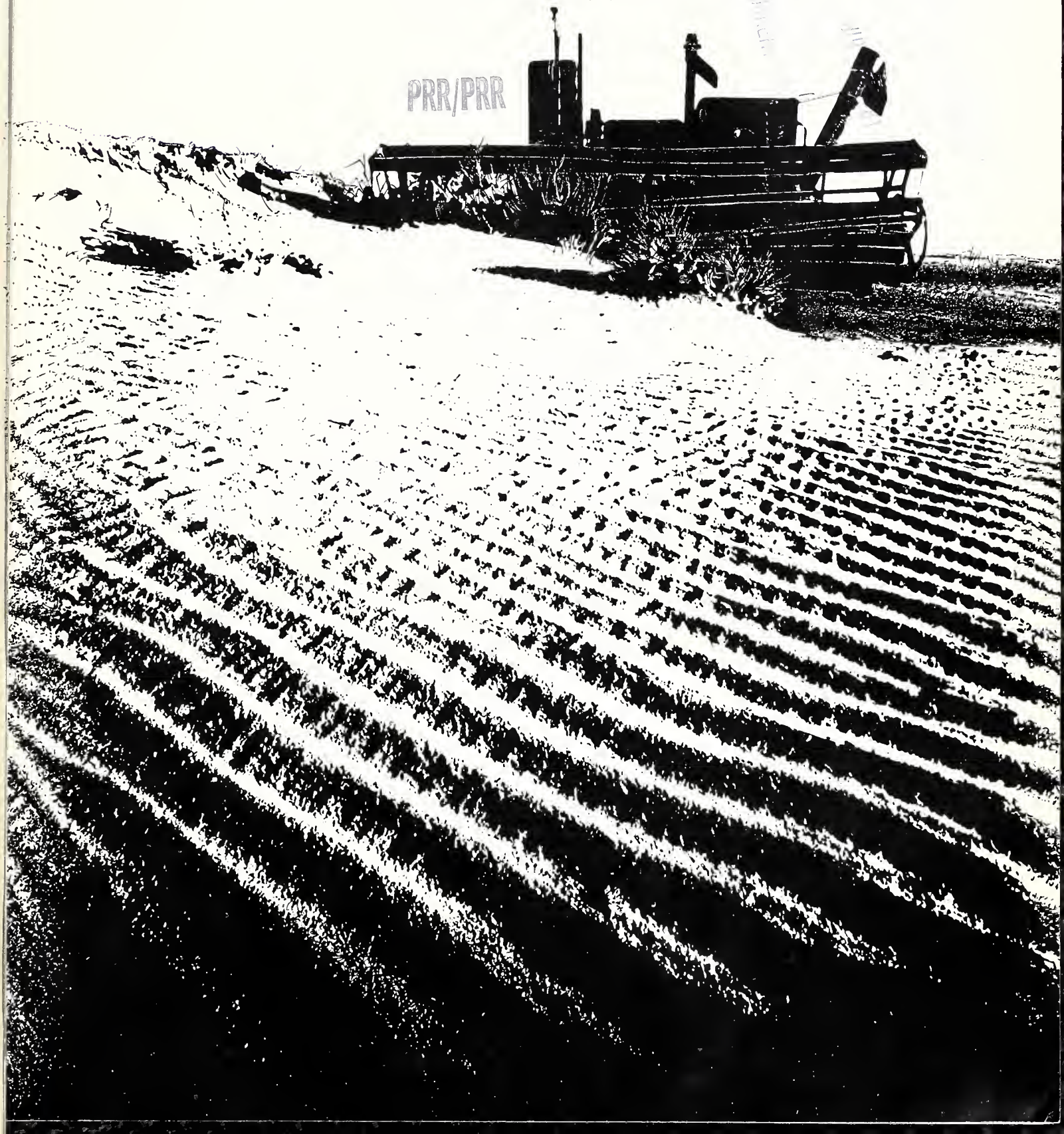

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Comments:

From the SCS Chief

This month marks the 25th anniversary of the Great Plains Conservation Program (GPCP) administered by the Soil Conservation Service. Many of you in the 10 Great Plains States will be involved in activities to commemorate the event. I commend the people in the States and local communities who have worked so hard to plan and coordinate these celebrations.

Great Plains farmers and ranchers are special people. They are guardians of "the breadbasket of the world." They are also gamblers against tough odds—recurring drought, extremes of heat and cold, strong winds, occasional insect plagues, and a dwindling supply of irrigation water.

In 1956, Congress authorized the GPCP to assist farm and ranch operators in coping with the climatic hazards of the region. Through the program, SCS provides technical and financial assistance to landowners in making adjustments in land uses and changes in cropping and grazing systems to conserve soil, water, and related resources.

By 1980, Great Plains farmers and ranchers had signed more than 58,000 GPCP contracts covering more than 110 million acres. With SCS assistance they had established more than 5 million acres of permanent vegetative cover, planted 64,000 acres of windbreaks, installed 98,000 miles of terraces, and installed 13,000 miles of livestock water pipelines. SCS work in the Great Plains has also included assisting landowners with increased irrigation efficiency, brush management, planned grazing systems, waste disposal, and critical area treatment.

SCS, conservation districts, and other Federal, State, and local agencies have done much to help landowners stabilize agriculture in an unstable environment, but much remains to be done. In 1977, when the National Resource Inventories were last conducted, wind erosion in the Great Plains exceeded 5 tons per acre on 23 percent of the cropland and 6 percent of the rangeland. Total tons of soil blown that year topped 1 million.

Great Plains farm and ranch operators have demonstrated their confidence in SCS and the GPCP to help them fight erosion and the loss of soil productivity. Last year, 49 additional counties were designated as eligible for GPCP assistance, bringing the total number of eligible counties to 518. About 50 more counties are interested in becoming eligible.

As we celebrate the anniversary of GPCP, it is a time to look back, but more importantly, it is a time to look forward to the big job remaining.

Cover: Ripples of wind-blown soil encroach on abandoned farm machinery on this Kansas farm. To halt the threat of soil erosion in the Great Plains, the Soil Conservation Service is working with farmers and ranchers to install soil and water conservation practices. (Photo, Gene Alexander, visual information specialist, Midwest Technical Service Center, SCS, Lincoln, Nebr.)

John R. Block
Secretary of Agriculture

Norman A. Berg, Chief
Soil Conservation Service

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Great Plains Conservation Program

Farmers and Ranchers Fight to Hold Great Plains Soil

by Ted Kupelian

Top photo: Sept. 10, 1935—dust storms have taken their toll on this farm in Tripp County, S. Dak.

Bottom photo: July 20, 1939—the same farm from a different angle shows that even though the wind-blown soil has been removed, soil conservation practices are needed to bring the farm back to life.

People still remember how swiftly the country's first national dust storm turned the Great Plains countryside into the Dust Bowl nearly 50 years ago. The catastrophe caught the victims by surprise, although a lack of adequate conservation practices had been laying the groundwork for trouble for a long time.

"The Dust Bowl need not be repeated," says Norman Berg, chief of USDA's Soil Conservation Service. "With modern conservation methods and advanced agricultural technology, farmers can put up a better fight."

A special team effort of farmers and SCS is called the Great Plains Conservation Program (GPCP). USDA records show that GPCP achievements are considerable. Last year, Berg says, SCS helped farmers and ranchers adequately protect more than 7 million acres of land in the Great Plains. Conservation work during the year included 138,000 acres of permanent vegetative cover, 3,002 miles of terraces, 976 miles of livestock water pipelines, and 3,766 acres of windbreaks. Over the years, SCS has released 69 native and introduced conservation plants to commercial growers for use in the Great Plains.

Under GPCP, 518 counties in the Great Plains States voluntarily practice extensive soil and water conservation. They receive technical and financial assistance from USDA through SCS.

To qualify for GPCP assistance, a county must be designated by the Secretary of Agriculture as susceptible to serious wind and water erosion.

Farmers taking part in the soil-saving effort work with SCS specialists. They develop conservation plans to meet the needs of each farm, and the Federal Government pays part of the costs. The Federal share of the expenses for each conservation practice ranges from 50 to 80 percent. The landowner pays the rest.

President Eisenhower signed the program into law in 1956. In 1980, Congress extended the program to September 30, 1991, and authorized $600 million in overall cost-sharing funds. Altogether, cost-share payments cannot exceed $50 million for any program year.

The GPCP, says Berg, is coordinated with other Federal, State, and local government agencies through State and county committees. It is intended to be in addition to, not a substitute for, other programs operating in the Great Plains States.

Besides controlling wind erosion, the program helps farmers whose land is subject to serious erosion by water because of soil type, terrain, climate, flooding, and salinity.

Visualize an aerial view of the 10 Great Plains States—a total land area of 490 million acres—and saving the soil looks like an impossible task, but it is being done, says Berg.

"We've had no Dust Bowls since the 1930's," says Berg. "Much soil that otherwise would be lost is staying on the Great Plains. However, we'll have to do more to prevent one in the years ahead."

Russ Thompson, a rancher near Lusk, Wyo., puts it this way: "Despite the especially dry conditions around Lusk last year, we were able to manage our ranch so we did not have to worry about buying hay or hauling water. It would have been harder to do this before the GPCP. That's why I got interested in soil conservation in the first place."

Thompson says he is using the program to carry out several practices to maintain good rangeland. These include piping livestock water to various areas and fencing pastures so animals will graze the forage evenly.

"I have backed the Great Plains contract all the way," says Thompson. "Nobody has a crystal ball to predict the future. The Great Plains program gives us the flexibility to modify plans as operating conditions change."

Since 1956, more than 58,000 conservation contracts have been developed on 110 million acres in the 10 Great Plains States. Nearly 11,075 contracts are now in effect on more than 28 million acres.

Ted Kupelian,
writer-editor, Information and Public Affairs, SCS, Washington, D.C.

The following three articles tell about the experiences of farmers and ranchers with Great Plains Conservation Program contracts on two Montana ranches and on one farm in Texas. Although the conservation practices may vary from State to State, stories similar to these can be found in any of the 10 Great Plains States.

Montana Ranchers Improve Range and Double the Herd

by Keith Robertson

In the last 13 years, a ranch in the Reedpoint, Mont., area has almost doubled its carrying capacity while decreasing the total grazing acreage.

Bob Van Oosten, who runs a 10,000-acre cow/calf operation with his father Art and his brother Gene in south-central Montana, says he was able to accomplish this unusual situation by seeding intermediate wheatgrass on about 2,000 acres of poor condition rangeland.

Where there was mostly sagebrush, blue grama, and cactus, the Van Oosten Ranch now raises almost pure stands of intermediate wheatgrass. By seeding the tame grass, "I'd estimate that we've increased our forage production anywhere from 3 to 5 times," Bob explained. "As a result, we've been able to almost double our cattle herd.

"The increase in our grazing capacity allowed us to nearly double our farming operation, too," Bob added.

The change in the Van Oosten Ranch has been gradual. Art moved to the area in the early 1900's with his father. The Van Oostens added to the ranch up through the 1950's.

In 1968, Art entered into a Great Plains Conservation Program contract which initiated the changes.

Using both technical and financial assistance from the Soil Conservation Service through the Stillwater Conservation District, the Van Oostens began the reseeding along with other improvements.

They chose almost pure stands of intermediate wheatgrass for several reasons. Besides its ease of establishment and high production rates, an important selling factor to the Van Oostens was its versatility—intermediate could either be hayed or grazed.

Because the Van Oostens don't raise any alfalfa, the intermediate wheatgrass serves as their sole hay base. Bob estimates that they average 15,000 bales per year. This, combined with straw from the grain fields, provides the forage base for the winter.

"We're a unique operation," said Bob. "We're probably the only dryland operation you'll see using a feed wagon." The Van Oostens grind the intermediate wheatgrass and straw and mix it with grain, supplements, and water for dust control for winter feeding. This makes the ranch's livestock operation nearly self-sufficient and eliminates the need to buy hay.

Two other significant improvements under the Great Plains program were sagebrush spraying and a spring development.

"We sprayed a section of sagebrush with 2, 4-D at the rate of 2 pounds per acre; it doubled our grass production in 3 years," Bob said. "Now I wish we had done two more sections at the same time."

Enough sagebrush was left for wildlife, especially upland game birds.

The spring development brought water to a completely dry section and supplemented water to three additional pastures. The spring development consisted of enlarging an existing spring, providing storage, and pumping water to tanks. Most of the other areas on the ranch had dependable water supplies.

Since their Great Plains contract ended in 1976, the family has continued to improve the ranch, primarily with more tame grass seedings. As the dry cycles inherent to the area arrive, the intermediate wheatgrass is providing another benefit.

"We feel that we're better equipped for a dry year now," Bob explained. "With our increased grass production, we can leave some old grass for the next year just in case of a drought."

Bob remembers the Great Plains program as "an excellent training tool. Now we don't question what needs to be done and how to do it. We just go out and do it."

Although some of the improvements would have been done on the ranch anyway, Bob is certain that more was done because of the Great Plains contract.

"It gave us some stimulation to do something new. Simply because you've been doing one thing one way doesn't mean it's the only or the best way. The Great Plains contract provided this stimulus."

Keith Robertson,
soil conservationist, SCS,
Columbus, Mont.

Water Development Heads the List of Ranch Improvements

by Brad Anseth

Ask Harold Simmes to name the biggest improvement on the family ranch in the last 10 years and no doubt the answer will be "water."

The reformation of the Simmes ranch in the Sunburst area of northern Montana from an over-grazed, under-fenced, and almost waterless sheep operation to a well-managed cattle operation began with water development in the early 1970's.

With the assistance of range and engineering specialists from the Soil Conservation Service office in Shelby, the Simmes family realized they needed to develop water, string miles of fences, renovate some native pastures, and seed some tame grasses. For Harold, his parents Herman and Margaret, and brother John, it was a tall, expensive order; but one they were willing to tackle.

To speed up the process, the family entered into a Great Plains Conservation Program contract with SCS. Based on an inventory of the operation, SCS specialists and the Simmes family agreed on a 7-year schedule for installing the needed conservation practices, and the contract was signed.

Under the contract, the Simmes family not only received technical assistance from SCS specialists, but also received cost-share assistance to be paid when each conservation practice was implemented.

Although the contract ran 7 years, the family completed the water development and fencing in the first 3 years.

Water was a top priority. Harold remembers his father hauling "two to three loads of water every day and sometimes six to seven loads a day during calving." They wore out a truck just hauling water from town to stock tanks scattered over the ranch.

Eventually, the family developed a spring that provides all of the domestic water and most of the livestock water for the 8,300 acres of rangeland.

With livestock water assured, the family looked to improving their rangeland; 8 miles of new cross fences divided the range into 19 pastures for better management. Native rangeland in really poor condition was chiseled, a controversial practice in the family.

"I almost got run off the place when I started chiseling some of our native pastures," Harold said with a smile. Instead of doing 20 acres as the family originally agreed, Harold worked about 90 acres and faced angry parents who weren't convinced chiseling would work.

But the results convinced the family. Harold has chiseled more than 1,800 acres of range consisting primarily of club moss, blue grama, and fringed sagewort and now manages, in their place, good stands of western wheatgrass and green needlegrass.

"Management is the key to range renovation," Harold explained. "You've got to stay off it at least 1 year." Harold deferred their renovated pastures for 3 years, a year longer than SCS had recommended.

For spring grazing, the Simmes have planted crested wheatgrass and alfalfa. "My goal is to have 3 or 4 acres of tame grass for each cow," Harold said, 2 acres more than SCS sets as a minimum. Harold runs his cows on tame grass from April to the middle of June usually. In wet years, he's stayed on tame grass until July, giving his native grasses an even better start. Every year a pasture is grazed at a different time.

Although Harold has planted Russian wildrye for fall use, he prefers using the stubble fields on his 2,800 acres of cropland.

The increase in grass production on the ranch speaks for the Simmes management. "We went from 380 pounds of production per acre on native range to 1,000 pounds of production per acre," Harold said.

The weaning weights also tell the success of planned grazing systems. In the early 1970's when Harold started in the Great Plains program, he was lucky to get 420-pound steers and 370-pound heifers. Last fall Harold weaned 526-pound steers and 430-pound heifers.

"Culling and genetics have a lot to do with it now," Harold admits. "But we have to have the grass to support the cows and calves." His management goal now is 600-pound weaning weight. To achieve this goal he plans to seed more tame grasses and to renovate another 900 acres.

Harold, who was appointed by the Governor to the State Rangeland Resource Committee and was named 1980 Rangeman of the Year in Montana, says the Great Plains Conservation Program worked on his ranch. "It really helped us set priorities—water and fences—so we can control where and when the cattle graze." But along with technical help, the program also provided the money to help get the job done more quickly.

Brad Anseth,
public information officer,
SCS, Bozeman, Mont.

Terraces Made the Difference for This Texas Farmer

by Ted Kupelian

B. H. (Bill) Piercy of Lubbock County, Tex., is sold on the Great Plains Conservation Program (GPCP) and on dryland farming. "I was thrilled to find out about the program's various benefits and was eager for Soil Conservation Service technical assistance," he said.

Piercy has been a cooperator with the Lubbock County Soil and Water Conservation District since he started farming in Lubbock 29 years ago. He owns farms in neighboring Cochran and Hockley Counties and has complete conservation management plans on both of them. But it is his 221-acre cotton farm in Lubbock, which he converted from partial irrigation to total dryland, that pleases Piercy most.

"SCS District Conservationist Bob Arhelger and his staff suggested constructing level, parallel terraces on my land," Piercy said. "Not only do the terraces control wind and water erosion, but they also conserve moisture."

Under a GPCP contract, Piercy installed terraces on every acre of his farm in less than a year. The terraces are level, which means no grade in the channel, so they hold the moisture until it seeps into the ground where it is stored until the crop can use it. The terraces are also parallel which makes them easier to farm by reducing point rows and odd areas.

Piercy also applied several other conservation practices such as crop residue management, conservation cropping systems, and contour farming.

Piercy credits SCS technical expertise with saving him time, effort, and money in addition to increasing his crop yield.

When Piercy purchased his Lubbock farm in the mid-1970's, there were four small irrigation wells. He soon decided that his irrigation costs were too high. He thought that parallel terraces could increase yields and be more profitable than irrigation, so he decided to convert to dryland farming and conserve water with terraces.

"When you use terraces, there is much additional work to be done," he explained. "My system is laid out with the terraces parallel so I can use my eight-row equipment. Generally, I'll work the terraces separately. But the additional cost in labor is only one-tenth what it would cost me to irrigate."

His yield is about 75 percent of what it was without irrigation. The additional 25 percent yield would not have paid the expense of irrigation. He has made at least one-third more than his neighbors on dryland who have not terraced their cropland. Last year he made about three-fifths bale of cotton per acre while his neighbors made only one-fifth bale per acre.

When asked what affect the drought has had on his farm operation he said, "I made a crop last year when I wouldn't have without the moisture-holding terraces."

Piercy recently became a director on the Lubbock County Soil and Water Conservation District Board. He has hosted several tours on his farm for various student groups.

Ted Kupelian,
writer-editor, Information and Public Affairs,
SCS, Washington, D.C.

International Land, Pasture, and Range Contest Held

More than 900 individuals from 30 States competed in the 30th Annual International Land, Pasture, and Range Judging Contest in Oklahoma City, May 6 and 7, 1981.

The event, sometimes called the Olympics of Land Evaluation, is divided into three divisions: 4-H, Future Farmers of America (FFA), and Adult. Teams compete in land judging, pasture and range judging, and homesite evaluation. Trophies, medals, and cash awards are given to the top teams and individuals with the highest scores. Each team is comprised of four members and scores of the high three members make the team scores.

The contest was sponsored this year by the Federal Land Bank of Wichita and its 12 affiliated federal land bank associations located in Oklahoma.

The contest is set up and run by the Soil Conservation Service, Bureau of Indian Affairs, Extension Service, Farmers Home Administration, Agricultural Stabilization and Conservation Service, and other groups and agencies.

This year's winners were:

Land Judging

4-H: Jack, Ind., team
4-H High Individual: Roger Votawa, Peru, Ind.
FFA: Beggs, Okla., team
FFA High Individual: Merrily Jameson, Beggs, Okla.
Winner of Adult Division: J. D. Hebert, Erath, La.

Pasture and Range Judging

4-H: Binger, Okla., team
4-H High Individual: Melody Jones, Okmulgee, Okla.

Contestants in a "pit" are trying to identify soil characteristics such as texture, depth of topsoil, permeability, and amount of erosion that has taken place.

FFA: Mount Vernon, Tex., team
FFA High Individual: Joe Stewart, Ranger, Tex.
Adult Division: Martin Mount, Beggs, Okla.

Homesite

4-H: Southwood County, Ind., team
4-H High Individual: Roger Votawa, Peru, Ind.
FFA: Hoyt, Kans., team
FFA High Individual: Steve Allen, Freeman, Wash.
Adult Division: Gene Chatalgnier, Alexandria, La.

F. Dwain Phillips,
public information officer,
SCS, Stillwater, Okla.

Range Tours and Schools

Ag Lenders Learn What They're Lending For

This September instructors from Montana State University and from USDA's Soil Conservation Service and Extension Service will teach range management practices to Gallatin Valley bankers and their rancher clients at Montana State University's Red Bluff Ranch near Bozeman, Mont.

This school grew from the State Ag Lenders (Agricultural Lenders) School started in 1964 by a group of banks and other organizations that lend money to ranchers in Montana. The State school trains ag lenders in the basics of range management at an annual 3-day session on a ranch. The ag lenders then go back to their communities better able to serve their rancher clients.

The Gallatin Valley ag lenders go a step further and conduct their own version of the State school for their rancher clients. This year the Bozeman area ranchers and the ag lenders who invited them will learn to identify range plants and will tour the Red Bluff Ranch. Instructors from Montana State University's Animal and Range Science Department will report on their research and discuss research needs with the ranchers. For example, ranchers are interested in research to solve the problem of livestock overgrazing the wet areas along creek bottoms.

The ranchers and ag lenders learn that range management starts with range plants: good rangeland usually has a good stand of desirable climax vegetation such as bluebunch wheatgrass, which has deep roots and can produce 1,500 pounds of forage per acre. Overgrazed rangeland invites Nature to fill in bare spots with less desirable plants such as blue grama, which has shallower roots and might produce only 400 pounds of forage per acre.

The State Ag Lenders School has drastically changed the loan policies of ag lenders in Montana. The policies have gone from short-term loans that required ranchers to buy more livestock than their rangeland could support, to long-term, open-ended loans that allow ranchers to improve their rangeland for a long-term increase in production that allows them to pay back their loans gradually.

"A rancher may create his own drought," said Gene Handl, SCS area range conservationist in Bozeman, referring to ranchers who overgraze their land and allow it to be covered with vegetation that cannot survive a drought.

Montana's ag lender schools are protecting Montana's rangeland and economy with drought-resistant loans.

Brad Anseth,
public information officer,
SCS, Bozeman, Mont.

Carl Wambolt, of USDA's Extension Service, holds up a range plant while Gene Handl, Soil Conservation Service range conservationist, explains range plant root systems. The two men were instructors at a range school sponsored by agricultural lending institutions around Montana's Gallatin Valley.

Tour Follows Cattle Rotation

Cattle rancher and registered Angus cattle breeder Steve Goodfellow will lead ranchers, Soil Conservation Service employees, other USDA employees, university instructors, and others, on a 3-hour tour of his ranch this month. He will show them how his rotation grazing system works on his 956-acre cow-calf operation in eastern South Dakota.

The ranchers and other conservationists will start at the ranch headquarters and visit the pastures in the same order as the cattle do in their seasonal rotation cycle each year.

After the ranch headquarters, tour participants will visit the two spring pastures where the cattle graze on cool-season, introduced forage plants, brome and alfalfa. The cattle graze in one pasture from April to June and in another from June to July, where they are bred.

From the spring pastures, the visitors will move on to the summer pasture where Goodfellow's cattle graze native, warm-season grasses: indiangrass, switchgrass, big bluestem, little bluestem, and sideoats grama. Goodfellow planted the grass mixture using a special drill provided by the Brookings Conservation District.

Goodfellow divides the summer range into two smaller pastures so that the cattle can graze one properly and uniformly before moving to the other in late summer before they overgraze the first one.

The group will leave the grazing cattle to look at the cornfields where the breeding herd grazes on corn stubble and grass in October, after the corn harvest.

From the cornfields, the visitors will go to a small winter pasture, near the ranch headquarters, where the breeding cattle finish their year's grazing, protected from the winter storms by hills and juniper trees. These cattle also eat hay and silage at a feedlot near their pasture. From October to December, Goodfellow allows only the breeding cattle to graze and confines the feeder cattle to a feedlot where they are finished for slaughter.

Goodfellow maintains a good grass cover with frequent rotations and a mixture of native, warm-season grasses which are adapted to South Dakota's hot summers. As a result, Goodfellow survived a drought in the 1970's that forced many of his neighbors to rent pastureland or sell some of their cattle.

Besides protecting his grass and his land, Goodfellow also protects water quality in recreational lakes near his ranch, by using dikes to divert runoff water from his two feedlots to a series of lagoons he dug with SCS assistance.

Goodfellow is an active district cooperator who demonstrates that conservation provides economic benefits to ranchers as well as nearby communities.

Floyd Dee Watson,
district conservationist,
SCS, Brookings, S. Dak.

Gilbert G. Bierwagen,
conservation agronomist,
SCS, Brookings, S. Dak.

All They Needed to Know About Ranching

Twenty-five Soil Conservation Service employees became students last month when they studied ranching in a 2-week course designed for them by Texas Christian University (TCU) in Fort Worth, Tex.

TCU taught the course, "Working Effectively With Livestock Producers," for the first time in 1980. SCS decided it was successful and asked that it be repeated in 1981.

The intensive course takes 10 days, about 8 hours a day, and includes the essential points from TCU's 58-semester-hour graduate program in range management.

The SCS employees—soil conservationists, range conservationists, and district conservationists—learn about cattle health, cattle breeding, new cattle marketing techniques that use computers, and different styles of raising cattle. For 3 or 4 days, the students visit three or four different kinds of ranching operations.

The course tells new SCS employees, or those without ranch or farm experience, the things they should know about the cattle industry so they can communicate with ranchers.

The TCU instructors who teach this course are all ranchers in the Fort Worth area.

SCS employees who learn from ranchers have a better chance of getting the attention of ranchers than those who have only an academic background that may not have kept pace with the rapid changes in ranching technology.

Norman Klopfenstein,
public information specialist,
South Technical Service Center,
SCS, Fort Worth, Tex.

Livestock Savor Cell Grazing

by Nancy M. Garlitz

"Rising costs and erratic weather are forcing U.S. ranchers to seek new ways to get the most livestock production for the least cost and still protect soil and water resources," says Mark Moseley, Soil Conservation Service area range conservationist in San Angelo, Tex. A short duration cell grazing method is helping some ranchers to do just that.

The method of cell grazing which has recently been introduced to the United States by Allan Savory, a range consultant from Rhodesia, Africa, is also known as the Savory grazing method. Under the method, a grazing area, or cell, is commonly divided into paddocks, or pastures, which spread out from a central point like the spokes of a wagon wheel. Ranchers move their livestock frequently through the series of pastures. Watering, supplemental feeding, and other livestock handling facilities are located in the center of these cells. The central facilities provide a familiar landmark for livestock and reduce livestock stress from frequent moves.

The length of time that livestock spend in each pasture varies according to the rate of growth, the size and number of the pastures, the size of the herd, and the available forage. Generally, pastures are grazed 3 to 5 days and then rested for 45 to 60 days. The idea is to graze the pasture quickly and then let it rest long enough for the grazed plants to grow back.

Savory says that the wagon-wheel design frequently used with his cell grazing method makes livestock handling easier and improves range condition, which provides more forage and quality nutrition for livestock and wildlife.

"Proper grazing under any range management system stimulates plant growth and leads to more production," says Moseley, "but the cell grazing method makes it easier to achieve."

"This method of grazing reduces the number and intensity of livestock bites on vegetation and helps plants to retain their vigor," says Don Sylvester, SCS range conservationist in Albuquerque, N. Mex. "According to Savory, his method permits selective grazing. Livestock come into a pasture and stay there only long enough to feed on the most palatable and nutritious plants. And these plants differ with the seasons."

"In Texas, the cell grazing method has provided better use of browse plants by cattle and has helped to make better use of supplemental feed during drought," says Ken

Narrow Base Terraces Interest Farmers

Narrow base terraces are appealing to farmers in Iowa and other States because they cost less than other terrace types.

"We're finding that narrow base terraces cost only about 60 percent of what grass backslope terraces do," says Douglas Seibel, Soil Conservation Service State engineer at Des Moines. He adds that the cost difference between narrow base and broad base terraces is even greater.

Narrow base terraces are cheaper because both sides are built short and steep and seeded to grass. In comparison, the upper side of a grass backslope terrace and both sides of a broad base terrace are made to be put into crops. Extra earth is moved to flatten these slopes to make them farmable.

In addition to lower cost, narrow base terraces may have a safety advantage. On grass backslope terraces, farmers may be in danger of tipping over when they operate equipment close to the ridge. The hazard is eliminated with narrow base terraces because the terrace itself isn't farmed.

When a terraced system requires the use of vertical intake pipes connected to underground tile or tubing, the pipes are less likely to be damaged if the terraces are narrow base. That's because the pipes aren't out in cropland, unlike broad base and grass backslope terraces.

Narrow base terraces also have some disadvantages, Seibel says. "The terraces are pushed up with a dozer and the steep sides don't allow much finishing work, so they may appear rough and unprofessional. Because of the narrow cross section and poor compaction, livestock and rain can cause considerable damage to the terraces, especially if seedings aren't firmly established. The steep sides also make maintenance work more difficult."

Seibel says SCS specifications in Iowa limit each terrace type to a certain range of slope steepness. Broad base terraces aren't recommended on slopes steeper than 8 percent. Narrow base terraces are suited for slopes up to 14 percent. Grass backslope terraces may be built on slopes up to 18 percent.

Land taken out of production by narrow base and grass backslope terraces is another consideration. For example, a 1,000-foot-long narrow base terrace with a 3-foot fill on an 8 percent slope will take about

Sparks, SCS area range conservationist in Uvalde, Tex.

"Through periodic photographing of cell grazing sites, we've been monitoring increases in the size and type of vegetation," says Gary Briggs, SCS State range conservationist in Phoenix, Ariz. "Cell grazing in Arizona has greatly improved stands of native cool-season grasses like western wheatgrass and squirreltail. One ranch in northeast Arizona is divided into 13 cells which range from 500 to 20,000 acres each."

Fencing is the biggest initial expense for ranchers switching to the cell grazing method. To cut the cost, some ranchers have begun installing solar-powered, electrified fences. Even if they are not solar powered, the electric fences are cheaper to install and easier to maintain than traditional fences.

SCS assists ranchers who request help with the layout and design of the cells and assesses the soil and vegetation resources to determine an initial stocking rate. Savory and SCS recommend increasing the herd in response to increases in forage production. On ranches that are in good condition at the time of switching to the cell grazing method, however, Savory recommends doubling the stocking rate as soon as the fences are up.

"When a rancher increases the stocking rate, overuse can occur sooner and the animals go into stress faster than the pasture does," says Moseley.

SCS is assessing the effect of the cell grazing method on erosion.

SCS range conservationists recommend that ranchers learn all they can about the cell grazing method before they decide to adopt it. "With a high stocking density, leaving cattle in a pasture just a day or two too long can lead to overuse and reduced plant vigor," says Sylvester. "And the next time the cattle are scheduled to graze that pasture, it won't be ready for them."

Savory's cell grazing method has potential for increasing production and protecting the environment, but it takes an astute rancher who is a good manager to make it work. SCS range conservationists are evaluating existing cell systems to sharpen their skills in providing assistance to interested ranchers.

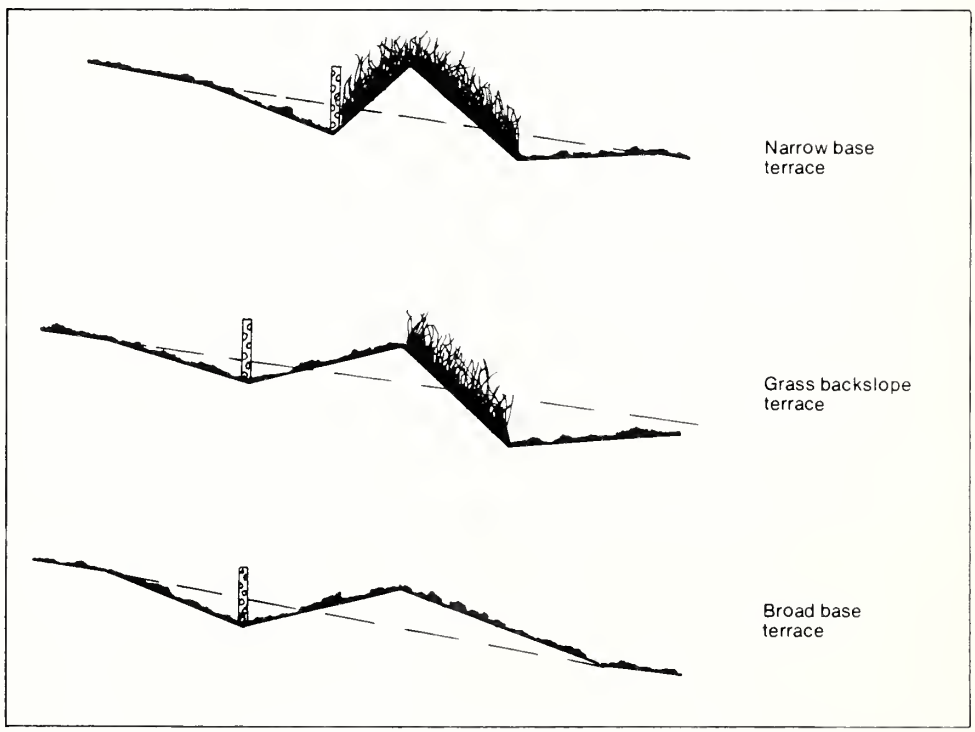
Nancy M. Garlitz,
associate editor, *Soil and Water Conservation News*, SCS, Washington, D.C.

0.4 acre or seven 30-inch rows out of production, Seibel says. Grass backslope terraces will take about 0.3 acre or five 30-inch rows under the same conditions. The greater the field slope and/or terrace fill height, the more land that is taken out of production.

The capacity of all three terrace types is the same. All are built to store at least 2 inches of runoff from the contributing area.

"We've been building narrow base terraces in Iowa for less than 2 years, so we're watching them closely to see if any problems develop in the years ahead," Seibel says. "We think there's a place for all three terrace types in Iowa."

Dean Miller,
public information specialist, SCS,
Des Moines, Iowa



News Briefs

Wind Damage in Great Plains More Than Double Last Year's

Wind damaged nearly 2½ times as much land in the Great Plains from November 1980 through May 1981 as it did during the same period a year earlier.

Reports from the 10-State area indicate wind damaged 12,488,237 acres for the 7-month season, up from 5,143,161 wind-damaged acres for the same 7 months the previous year.

The major factor contributing to wind erosion this season was lack of moisture.

Of the total land reported damaged, 94 percent, 11,734,305 acres, was cropland; 5 percent, 660,418 acres, was rangeland; and 1 percent, 93,514 acres, was other land.

Montana, with more than 2.6 million acres damaged, accounted for 21 percent of the total, but sharp increases in damage also were recorded in Nebraska, North Dakota, Colorado, Wyoming, and Kansas.

The northern Plains reported 51 percent of the damaged acreage.

Wind also destroyed crops or cover on 627,875 additional acres of land not damaged. Of this, 52 percent was in the southern Plains.

Each year, the Soil Conservation Service compiles wind erosion reports covering 7 months—November through May—using data supplied by 541 counties in the Great Plains.

Computer Model Monitors Soil Moisture

The Soil Conservation Service is working with Dr. Keith Saxton, of USDA's Science and Education Administration-Agricultural Research (SEA-AR), to develop by 1985 an accurate computer model that will help SCS monitor soil moisture in the Nation's cropland on a daily basis during each growing season.

Dr. Saxton developed the model, which he titled "SPAW" (Soil-Plant-Atmosphere-Water), in 1972. After the severe drought of 1976 and 1977, SCS looked for a way to analyze the effects of moisture stress on crop production and selected the SPAW model to do this.

The main goal of the SPAW model is to predict soil moisture conditions daily because the Nation's annual crop yield under drought conditions depends on the daily availability of plant water that comes from rain.

The SPAW model's calculations will supplement future data that will be collected by satellites and ground measurement stations. Planned satellites will pass by once every 9 days and, although they measure soil moisture using radar, they only measure the moisture in the top 2 inches of the soil while the SPAW model predicts all soil moisture that is available to crops to a depth of 6 feet or more, depending on the root depths of various crops. The ground stations measure soil moisture to root depth but may not have enough staff to collect soil moisture data daily and the stations measure only the soil moisture at the sites around the ground stations.

The SPAW model uses readily available information, including, for example, plant growth and rooting characteristics, soil profile descriptions, and plant drought resistance. The only information that needs to be added is recent weather information on precipitation and evaporation from the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce.

The main task to bring this model into operation will be to calibrate and verify it so that it can predict soil moisture conditions accurately over general cropland areas. Data to calibrate the model are being developed from the ground measurement stations, and from USDA's Economics and Statistics Service (ESS) crop yield estimates.

Most recently, Dr. Saxton applied the SPAW model to a series of ESS crop reporting districts in the Corn Belt, stretching in a narrow band from eastern Missouri to western Kansas and another study area from northeastern Iowa to southeast South Dakota. He chose these areas because of a high transition in rainfall and evapotranspiration from the Mississippi River to Kansas and South Dakota. Dr. Saxton worked mostly with corn but did some research with soybeans.

Now Dr. Saxton is expanding his research to the wheatfields of the Great Plains, which are particularly vulnerable to variations in rainfall.

Dr. Saxton is also cooperating in an SCS 5-year soil moisture pilot study which started in 1979 and is led by Dr. Milt Meyer, an SCS soil scientist. Seven soil moisture measurement sites are located in strategic areas throughout the Nation. The SPAW model will save SCS time and money on this study

because it will eventually reduce the frequency of field measurements to once or twice a growing season, by computer interpolation of data between measurements. At the same time, the pilot study data will be used to calibrate and verify the SPAW model for future soil moisture predictions.

SCS and the National Aeronautics and Space Administration are working on a satellite system to combine with a computer model and ground measurement stations, after 1985, through the soil moisture project in USDA's Agriculture and Resources Inventory Surveys through Aerospace and Remote Sensing (AgRISTARS) program. Dick Gilbert, an SCS soil scientist, is managing the AgRISTARS soil moisture project and is coordinating his work with the SPAW project for possible use in AgRISTARS.

Along with Gilbert, George Bluhm, SCS Director of Integrated Resource Information Systems, is coordinating in the joint SCS-SEA SPAW project. Bluhm said that the SPAW model fits into the overall plan to develop a complete data base by 1985 that will give SCS employees speedy and easy access to technical information they need to do their jobs.

Donald L. Comis,
assistant editor, *Soil and Water Conservation News*, SCS, Washington, D.C.

Census Figures Show Population Shift

The final figures of the 1980 census were released on April 1, 1981, and they support what experts have been saying: For the first time in more than 160 years, more people are moving from cities to rural areas than from rural areas to cities.

"These figures confirm what we've been talking about, that the population of the nonmetropolitan areas of the Nation is increasing, overall, at a faster rate than the metropolitan areas. We no longer have to base this statement on estimates, now that we have the census figures," said Calvin L. Beale, population studies group leader at the Economics and Statistics Service (ESS), U.S. Department of Agriculture.

ESS published a report in February 1981 that includes a State-by-State breakdown of this population change, using preliminary 1980 data that are essentially the same as the final figures.

The report shows that population in nonmetropolitan (rural and small town) areas increased by 15.4 percent in the past decade while the metropolitan (urban and suburban) population increased by only 9.1 percent. This is a dramatic reversal of the 1960's figures: a 4.4 percent increase for rural and small town areas and 17 percent for urban and suburban areas.

Regionally, rural and small town growth was most rapid in the West, averaging more than 30 percent. At the other extreme, about 485 rural counties, mostly in the Great Plains and western Corn Belt, lost people, mostly farmers.

One of the most significant shifts occurred in the coalfields of Kentucky, Virginia, and West Virginia; this area changed from a loss in population of nearly 17 percent in the 1960's to a gain in population of 20 percent by 1980. A revival of coal mining and other changes brought people into this area.

Rhode Island, which lost personnel from a naval base in its only rural county, is the only State that lost people in its rural areas.

"These people are not moving to rural areas out of economic necessity. They prefer to live in rural areas, citing reasons such as wanting a better place to raise children, and to avoid urban stress and strain, traffic, the 'rat race,' and pollution," Beale said.

Beale also said that the data emphasize the importance of orienting Federal services to the smaller scale of rural areas to avoid urban solutions to rural problems.

A limited number of copies of the ESS report titled "Rural and Small Town Population Change, 1970-80" are available free from Calvin L. Beale, Economics and Statistics Service, U.S. Department of Agriculture, Washington, D.C. 20250.

Donald L. Comis,
assistant editor, *Soil and Water Conservation News*, SCS, Washington, D.C.

DC Saves Children From Plant Poisoning

Most Soil Conservation Service personnel in field offices can identify many of the poisonous plants in their areas and occasionally the knowledge can be rewarding.

Thanks to the quick actions of Laramie McEntire, SCS district conservationist in Canadian, Tex., two young children were saved from poisoning from silverleaf nightshade berries.

The girls, ages 2½ and 3 years, were discovered eating the berries while playing in the country. Suspecting they were poisonous, the mother of one of the girls took the berries to McEntire who immediately identified the deadly plant. Both children were taken to a doctor's office where their stomachs were successfully pumped.

The families of the girls expressed their appreciation by thanking McEntire in an ad in the local newspaper.

McEntire said he was able to identify the berries from plant identifications done in college.

"Poisonous plants are widespread here and many people don't realize how toxic they are, particularly those kept in homes," he said.

All parts of silverleaf nightshade are toxic, although poisoning is usually associated with the ingestion of the berries. Symptoms usually do not appear for several hours after ingestion; therefore, it is usually too late to treat the victim after symptoms occur.

At least 75 plants that grow in Texas have toxic properties at some time and under certain conditions and can cause death or illness to those who come in contact with them.

To prevent other poisonings, SCS offices in the State's 201 soil and water conservation districts are cooperating with the National Safety Council in keeping the public alerted to poisonous plants.

As a result, an 18-minute slide show entitled "Poisonous Plants in Texas" has been developed and distributed to local SCS offices. Interested organizations can borrow the show from local offices.

Sharon R. Boyd,
contributing writer, Information and Public Affairs, SCS, Washington, D.C.

Scholarship Honors SCS Employee

The Board of Supervisors of the Delta Soil Conservation District in Utah has begun a memorial agricultural scholarship in honor of former Soil Conservation Service employee Joseph P. Barney.

Barney began his career nearly 25 years ago as an engineering aid in Delta, Utah. He was recognized for his many contributions to soil conservation.

The $200 Joe Barney Scholarship will be given to a Delta High School student in good scholastic standing and interested in further study in a conservation field.

Potential Ghost Town Is Brought Back to Life

by Marilyn O'Dell and Deane Harrison

Since it was settled in 1869, Park Valley, Utah—a small isolated community in northwestern Utah—has experienced numerous setbacks, any of which could have turned it into a ghost town.

In 1903, a nearby railroad was rerouted, making it necessary to travel more than 50 miles to the nearest shipping point. In the 1930's successive years of drought and extensive overgrazing had so depleted the rangeland that it became impossible for Park Valley residents to make a living. In two decades the population was cut in half by people leaving for more profitable jobs in the city.

But the remaining Park Valley residents weren't ready to turn their town over to ghosts. The first step on their road to recovery was the formation of the West Box Elder Soil Conservation District (SCD) in 1950, enabling them to receive technical help from the Soil Conservation Service.

The next step was the organization of the Bear River Resource Conservation and Development (RC&D) Area. Grouse Creek, a neighboring community, initiated the program and brought the idea to the West Box Elder SCD. Soon all the major irrigation companies and grazing associations in the area along with other SCD's and counties in Utah and Idaho were included in the program.

The first benefit the Park Valley community received from the RC&D

effort was a fire engine, the first they had ever had. The truck, a surplus government vehicle provided by the Utah Department of Forestry and Fire Control, was refurbished and equipped with a water tank to fight rangeland and building fires. RC&D funds for this project were transferred to the State through USDA's Forest Service.

In 1969, $4,800 of RC&D funds were transferred to the Forest Service to augment regular Forest Service funds for range analysis in the nearby Raft River Mountains. The analysis showed that grazing could be increased and it identified land treatment needed. The community installed recommended fencing, stockwater troughs, and pipelines; initiated brush control; and began using a rotation grazing system. Range production increased more than 30 percent within 3 years.

The community's recovery continued. The U.S. Department of the Interior's Bureau of Reclamation did an appraisal report of resources and the Geological Survey did a streamflow study in western Box Elder County. They noted that many streams did not have historical records. Now an SCD employee reads recording devices on several streams. The data collected were later used in designing sprinkler irrigation systems.

Weather modification then became a major goal for Park Valley, so the RC&D Weather Modification Committee went to work on this problem. Over a 7-year period, the committee arranged for feasibility and economic benefits studies, then obtained funding from the Utah Division of Water Resources. In spring 1976, the first cloud seeding plane was in the sky.

The community formed the Park Valley Improvement Association, a unit of local government which would work on specific local problems such as conservation of water, depleted range, and needed community facilities. With assistance from USDA's Science and Education Administration–Extension, a demonstration ranch was set up in 1976.

Irrigation improvements were undertaken with the help of Emergency Drought Funds administered by USDA's Agricultural Stabilization and Conservation Service. With SCS technical help, three irrigation companies installed nearly 18 miles of sprinkler system mainline and 2 miles of 15-inch concrete pipe to service about 7,700 acres, replacing earthen ditches and flood irrigation.

In July 1977, an RC&D measure was completed for the Fisher-Dunn critical area, 5,200 acres of critically eroding land. The area is being stabilized through brush control, seeding, construction of basin terraces, livestock watering facilities, and a rotation grazing system on an additional 19,000 acres. SCS is providing seed and fencing materials and constructing the terraces with RC&D funds as well as providing technical assistance. Local people have obtained equipment to do the chaining, seeding, and construction work.

Improvements to the irrigation systems and range increased the returns from the livestock industry, but Park Valley had other needs.

In 1975, L. J. Carter decided to close his general store. The nearest store and gas station were then 35 miles away. Two young local men, Lynn and Layne Palmer, were interested in taking it over but needed financial help. Local banks were sympathetic but reluctant to tie up money on a remote store in Park Valley. The RC&D Executive Board formed a committee that worked with the Small Business Administration (SBA), formed a development district, collected 10 percent of the needed funds, and helped put together a joint loan with SBA and the Bear River State Bank.

Just a half block from the store, the Improvement Association is building a new community park. Converting a patch of rocky, sagebrush-covered ground into an attractive place for community gatherings is a big job—but not too big for Park Valley's citizens.

With a 50-percent grant from the USDI Bureau of Outdoor Recreation and everyone pitching in, they're doing it. They were able to hire some workers through the Utah Job Service with Comprehensive Employment and Training Act funds. The planned rodeo grounds, picnic area, and ballfield will be a focal point for community life.

Rangeland improvement, erosion control, irrigation improvement, fire protection, cloud seeding, a general store, and a park—projects in Park Valley are diverse and the benefits are far reaching. Added together, they illustrate how local people working together with agencies assisting can really give meaning to the phrase, "The objective of the RC&D program is to improve the quality of life."

Marilyn O'Dell,
was RC&D clerk, Bear River RC&D, SCS, Brigham City, Utah, and is now agricultural economist, SCS, Salt Lake City, Utah

Deane Harrison,
was RC&D coordinator, Bear River RC&D, SCS, Brigham City, Utah, and is now State range conservationist, SCS, Spokane, Wash.

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Meetings

August	2-5	Soil Conservation Society of America, Spokane, Wash.
	2-6	Conservation Education Association, Swannanoa, N.C.
	16-19	American Institute of Chemical Engineers, Detroit, Mich.
	16-19	National Farm & Power Equipment Dealers Association, Atlanta, Ga.
	16-20	National Association of County Agricultural Agents, Ithaca, N.Y.
	18-20	Association of State and Interstate Water Pollution Control Administrators, Baltimore, Md.
	26-Sept. 6	11th Congress on Irrigation and Drainage, Grenoble, France
September	7-11	Federal Bar Association, Denver, Colo.
	13-16	International Association of Fish and Wildlife Agencies, Albuquerque, N. Mex.
	16-18	American Fisheries Society, Albuquerque, N. Mex.
	16-18	National Waterways Conference, Inc., St. Louis, Mo.
	20-22	World Fertilizer Conference, New York, N.Y.
	21-25	Association of Interpretive Naturalists, Inc., Estes Park, Colo.
	22-25	National Conference of Editorial Writers, Providence, R.I.
	24-28	American Horticultural Society, Boston, Mass.
	27-30	Society of American Foresters, Orlando, Fla.
October	3-6	Farm and Industrial Equipment Institute, Hot Springs, Va.
	4-8	American Association of State Highway and Transportation Officials, Chicago, Ill.
	4-9	Water Pollution Control Federation, Detroit, Mich.
	7-8	Agricultural Research Institute, Washington, D.C.
	7-9	Hardwood Plywood Manufacturers Association, Vancouver, British Columbia, Canada
	10-15	National Environmental Sanitation and Maintenance Educational Conference, Clearwater Beach, Fla.
	11-14	American Forestry Association, Sante Fe, N. Mex.
	22-25	National Association of Biology Teachers, Inc., Las Vegas, Nev.
	25-29	Congress for Recreation and Parks, Minneapolis, Minn.
	26-30	American Society of Civil Engineers, St. Louis, Mo.

New Publications

Applied Soil Physics

by R. J. Hanks and G. L. Ashcroft

This textbook is part of an advanced series in agricultural sciences. The first three units of this book explain soil water content, soil water potential, and soil water flow. The fourth unit discusses relationships between soil, plants, and the atmosphere. The fifth and last unit explains soil heat flow and temperature. Each unit has mathematical examples, problems, and references. The book has 55 figures and an appendix which lists conversion factors.

The book is available for $19.80 from Springer-Verlag New York Inc., 44 Hartz Way, Secaucus, N.J. 07094. (Order No. 09457-1.)

Straw Decay and Its Effect on Disposal and Utilization

Edited by E. Grossbard

This is a collection of papers and discussions from a symposium on straw decay held at Hatfield Polytechnic in England in April 1979. The aim of the symposium was to bring together scientists from a variety of disciplines who had a common interest in the decay of straw. The research area extended from investigations into the consequences of direct planting and reduced cultivation, to the chemistry of the degradation of sodium hydroxide-treated straw in the rumen, and to the formation of methane by anerobic digestion of straw.

This book is available for $50.25 from John Wiley & Sons, Inc., One Wiley Drive, Somerset, N.J. 08873. (Order No. 0-471-27694-4.)

Recent Soil Surveys Published

by the Soil Conservation Service

Colorado: Yuma County.
Florida: Martin County Area.
Georgia: Columbia, McDuffie, and Warren Counties.
Idaho: Latah County Area.
Indiana: Porter County.
Kansas: Lyon County.
Mississippi: Neshoba County.
New York: Madison County.
Pennsylvania: Juniata and Mifflin Counties.
South Carolina: Edgefield County.
Texas: Kendall County.
West Virginia: Harrison and Taylor Counties.

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